CORRESPONDENCE/MEMORANDUM

State of Wisconsin

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TO: File

FROM: Jeff Myers, Andy Stewart, and John Roth – AM/7

SUBJECT: **Modeling Demonstration Method for Non-exempt[1] Potential Emissions from Non-vertical or Obstructed Stacks and Non-exempt Potential Fugitive[2] Emissions**

- **Issue** – Under the current Wisconsin air toxics rule (NR 445), there is a need to conduct modeling to demonstrate compliance for small amounts of non-exempt potential emissions from obstructed or non-vertical stacks and/or non-exempt potential fugitive emission sources of Hazardous Air Pollutants (HAPs). The Department was asked if there was a way to help sources address emissions from these types of sources without the need for modeling.

- **Background** - The 2004 revisions to NR 445 included new stack categories and threshold based on the release height of a hazardous air pollutant (HAP). These categories and thresholds were created in order to establish a level where a source could be presumed to be in compliance with applicable emission standards as long it emitted no more than the amount listed in the Tables A, B and C of NR 445. The levels themselves are based upon an air dispersion analysis conducted during rulemaking. "User" requirements were added to the rule to ensure that the threshold levels in Tables A, B and C are used in a manner that is consistent with the supporting analysis.

- **Consequence of the existing rule language** - The use requirements for Tables A, B and C prohibit sources with emissions from obstructed and/or non-exempt fugitive emissions from using the thresholds as a compliance demonstration method. (Ref: s.NR 445.07(6) & NR 445.08(2) (intro)). This results in the need to do additional analysis for these sources regardless of how small or insignificant the emissions are from the obstructed and/or fugitive sources.

- **What is being done to address the issue** – WDNR has performed a dispersion modeling analysis using the same modeling parameters used during rulemaking to determine the level of emissions

[1] Non-exempt emissions are emissions that are not exempted under NR 445.07(5). Exemptions include, but are not limited to: combustion of Group 1 fossil fuel, combustion of Group 2 fossil fuels with approved stack height, indoor fugitive emissions, emissions from laboratories, certain gasoline dispensing facilities, and combustion of wood, using "good wood combustion guidance" developed by the Department. **Note:** This memo applies only to non-exempt emissions, thus it does not apply to indoor fugitive emissions as long as they meet the exemption requirements of NR 445.07.

[2] Fugitive emissions are defined in NR 400 - "Fugitive emission" means an emission from any emission point within a facility other than a flue or stack. Important note: indoor fugitive emissions that meet the exemption in NR 445.07 are not included in the estimation of fugitive emissions for the purposes of the modeling demonstration used in this document. This document only applies to fugitive emissions that are non-exempt.

released from obstructed, non-vertical and/or fugitive emission sources that could cause an exceedance of the 1 hr, 24 hr and annual standards (including the risk based compliance option for carcinogens) in NR 445.

- **Approach** – Using this WDNR modeling analysis, it has been determined that satisfying the following equation will allow a source to demonstrate compliance consistent with the methods listed in NR 445.08(2) by relying on the generic dispersion modeling analysis. Sources wishing to use this approach will be showing, by using this analysis, that they will not exceed the standards set in the rule.

Equation: $E_{(Tot)} = E_{(UnObstructed)} + 4 X (E_{(Obstructed)} + E_{(Fugitive)})$

Where $E_{(Tot)}$ = Total non-exempt potential emissions of a HAP (or air toxic) for the entire facility, within each stack height category listed in the rule. There are 4 categories of stacks in the rule (i.e., <25ft, 25-<40ft, 40-75ft, >75 ft).

Where $E_{(UnObstructed)}$ = Total non-exempt potential emissions of a HAP (or air toxic) coming from all stacks in that are vertical and unobstructed.

$E_{(Obstructed)}$ = Total non-exempt potential emissions of a HAP (or air toxic) coming from all stacks in that are not within 10 degrees of being vertical or are obstructed (e.g., they have "rain hats", etc.) while the process is operating.

$E_{(Fugitive)}$ = Non-exempt fugitive emissions of a HAP (or air toxic) that are not emitted through vents, pipes, flues or stacks, or similar openings. Important note: emissions from indoor fugitive emissions that meet the requirements of NR 445.07 are not included in this calculation. See NR 445.07(5)(d) and additional DNR guidance documents regarding the demonstrations needed to show indoor emissions qualify for the indoor fugitive emissions exemption.

How to use this equation:

Calculate the non-exempt potential emissions from each stack within a given stack height category that is present at the entire contiguous facility and do the calculation for each stack category individually. If a source has emissions in 2 out of the 4 stack categories, they would need to use the equation twice, etc. For example if there are non-exempt fugitive emissions from a ground level source, those emissions would be placed into the category of less than 25 feet and multiplied by 4 before adding them to the total emissions from vertical unobstructed stacks in this same stack height category. In addition, if there are non-vertical and/or obstructed emissions released at a height 60 feet above ground level, those emissions would be placed into the 40 to 75 foot category and multiplied by 4 before adding them to the total emissions from the vertical unobstructed stacks in this same stack height category.

The final step is to compare the total weighted ($E_{(Tot)}$) non-exempt potential emissions to the allowed threshold in Tables A, B and C (most sources will only have to use Table A). Compliance can be demonstrated using this method only if a source's weighted emissions totals, ($E_{(Tot)}$) are below the threshold listed in Tables A, B and C in the rule, for every stack category. If any weighted emissions total

in any stack category exceeds the applicable threshold, then the source cannot use this method. Instead, one of the other available compliance options in NR 445.08 must be used.

IMPORTANT: This modeling demonstration can only be used if all the total non-exempt potential emissions are below the thresholds in each and every stack category. In other words, a source would need to satisfy this equation for each stack category present at the facility, for a total of up to 4 individual calculations of ($E_{(Tot)}$) (i.e., for stack heights <25ft, 25-<40ft , 40-75ft, and >75 ft).